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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,535	12/28/2001	Nigel J. Tolson	034942-268	9807

7590 01/13/2005

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EXAMINER	
CHOW, CHARLES CHIANG	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/040,535	TOLSON, NIGEL J.	
	Examiner	Art Unit	
	Charles Chow	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-10* is/are allowed.

6)☒ Claim(s) *1,2,5-7,11 and 12* is/are rejected.

7)☒ Claim(s) *3 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action
(Amendment received on 7/21/2004)

Declaration

1. Withdrawn the objection to declaration because inventor's petition is granted for no signature from inventor, 12/11/2002.

2. Withdrawn the objection to claim 3 for the "second passive twin-T section". Because it is defined in claim 2.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by Murtojarvi (US 2002/0168,956 A1).

Regarding **claim 6**, Martojarvi teaches a method for processing multiple signal modes according to different radio standards of a received rf signal (GSM, EDGE modes in [0051, 0081]), comprising performing down conversion of the received rf signal to produce analog I and Q signals and for each of the analog I and Q signal, filtering out unwanted signals (down converted in pahse out, quadrature out, filters 8, 10 for I, Q, Fig. 5, [0055-0059]), for a first standard processing the analog signal (processing signal in GSM mode [0081-0082]) using a first passive notch filter (passive notch filter 10 in Fig. 7) to produce a first filtered signal (output from notch filter 10), and for a second standard processing the analog signal

(processing signal in EDGE mode [0081-0082]) using an active notch filter (active notch filter 10 in Fig. 8) to produce a second filtered signal (output from notch filter 10), wherein the active notch filter exhibits smaller group delay than the passive notch filter (the narrower band stop from active notch filter, providing fast signal transition, which provides less group delay than passive notch filter [0068]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 7, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murtojarvi-'965 A1 in view of Thomasson (US 2002/0000,874 A1).

Regarding **claim 1**, Murtojarvi teaches a filter circuit apparatus for suppression of spurious signal in a superheterodyne circuit for receiver communication channels (Fig. 5, [0055-0059] with channel filter 8), a first analog active twin-T filter in a first signal path (signal path for I, Fig. 5) defining a first sharp notch (the notch from active twin-T notch filter 10, Fig. 8, [0069]). The notch filter 10 can be any type of notch filter [0073], the notch at the center of a second adjacent channel (the notch filter 10 to attenuate tail bit frequencies [0062], for the second adjacent channel). Murtojarvi teaches notch twin T filter 10 (Fig. 5, Fig. 7) can be either passive twin T filter (Fig. 7) or active Twin T filter (Fig. 8). Murtojarvi fails to teach the two twin T notch filters in series, such that the analog passive twin T filter coupled to receive output of the analog active twin-T filter

defining a second sharp notch. However, Thomasson teaches the cascaded notch filters with defined two notch frequencies (Fig. 6) from the cascaded notch filters 43, 44 in any order (abstract, Fig. 4-5, [0028-0031]), and the cascaded twin T filters can contain at least one active twin-T filter (Thomasson's claim 2). Thomasson teaches the analog inexpensive band pass filter with improved group delay [0012-0015]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Murtojarvi's twin-T with Thomasson's cascaded active, passive twin-T filters, such that the filter could further attenuate the different spurious signal with improved group delay.

Regarding **claim 2**, Murtojarvi teaches the superheterodyne circuit employs an in phase and a quadrature phase signal path (4, I, Q paths in Fig. 5), the first signal path corresponding to the in-phase signal (path from 4 to 12). Thomasson teaches at least one active twin T notch filters is in series with a second notch twin T filter, to replace Murtojarvi's notch filter 10 (Thomasson's claim 2 and Murtojarvi's any type of notch filters [0073]), for the quadrature phase signal path. Murtojarvi teaches the notch filter 10 for the first notch at center of the second adjacent channel to notch out tail bit frequencies, and Thomasson teaches the cascaded twin T filter having two notch frequencies, for the claimed second notch at the center of a next adjacent channel to suppress spurious signals at frequencies of modulation product.

Regarding **claim 7**, Murtojarvi teaches the twin-T notch filter 10 for the second standard EDGE, and notch filter 10 can be any type of notch filters. Murtojarvi fails to teach the second passive notch filter to produce a third filtered signal. However Thomasson teaches

these features, the cascaded second notch filters 44, 43 (Fig. 4-5). Thomasson teaches the analog inexpensive band pass filter with improved group delay [0012-0015]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Murtojarvi's twin-T with Thomasson's cascaded active, passive twin-T filters, such that the filter could further attenuate the different spurious signal.

Regarding **claim 11**, Murtojarvi teaches a filter apparatus comprising active twin-T filter (Fig. 5, Fig. 8), the active twin-T filter is operable to filter communications signal associated with the first wireless communication standard [0062-0063, 0082]. Murtojarvi fails to teach the passive notch filter network coupled to the active twin-T filter. However, Thomasson teaches these features, the cascaded notch filters with defined two sharp notches in Fig. 6 from the cascaded notch filters 43, 44 in any order (abstract, Fig. 4-5, [0028-0031]), with the at least one active twin-T filter in the cascaded filters (Thomasson's claim 2). Thomasson teaches the analog inexpensive band pass filter with improved group delay [0012-0015]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Murtojarvi's twin-T with Thomasson's cascaded active, passive twin-T filters, such that the filter could further attenuate the different spurious signal with improved group delay.

Regarding **claim 12**, Murtojarvi teaches the passive notch filter network (Fig. 7) is operable to filter communication signals associated with a second wireless communication standard (the notch filter 10 in Fig. 5, for filtering signal of a second wireless communication EDGE standard, the filtering of the EDGE tail bit [0082], the filter 10 for attenuating tail bit [0062-0063]).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murtojarvi-'965A1 in view of Thomasson, and further in view of Anderson (US 3,579,135).

Regarding **claim 5**, Murtojavi and Thomasson do not teach the active bootstrap configuration, topology, of the active twin-T filter. Anderson teaches a twin-t notch filter (Fig. 1-6, abstract, col. 1, lines 5-53). Anderson teaches the active bootstrapping topology configuration of the active twin-T filter, to sharpen up the filtering response curve (col. 4, line 5-20). Anderson teaches the improved stable active notch filtering network as shown in Fig. 2, with accuracy and efficiency for without tuning, for rejecting adjacent frequencies (col. 1, lines 11-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Murtojarvi, Thomasson with Anderson's active bootstrapping twin-T filter, such that the active notch filter could accurately reject the adjacent frequencies.

Allowable Subject Matter

6. The following is an examiner's statement of reasons for allowance:

Claims 8-10 are allowable over the prior art of record, the prior art fails to teach singly, particularly, or in combination, the subject matter, for the claimed features for the first passive and first active twin-T filters coupled to the in-phase output of the demodulator, and the second passive and active twin-T filters coupled to the quadrature-phase output of the demodulator (claim 8). The dependent claims are also allowable due to their dependency upon the independent claims.

The closest patent to Murtojarvi (US 2002/0168,956 A1) teaches the twin-T filter 10 (Fig. 5, Fig. 7-8 for each of the I, Q signal demodulation path. Murtojarvi fails to teach the first passive and first active twin-T filters coupled to the in-phase output of the demodulator, and the second passive and active twin-T filters coupled to the quadrature-phase output of the demodulator.

Other prior arts in below has been considered, but they fail to teach the above claimed features.

Thomasson (US 2002/0000,874 A1) teaches the cascaded active notch filter followed by passive notch filter in any order. Thomasson fails to teach the first passive and first active twin-T filters coupled to the in-phase output of the demodulator, and the second passive and active twin-T filters coupled to the quadrature-phase output of the demodulator.

West (US 3,577,179) teaches cascaded active twin-T filter for adjacent, next adjacent spurious signal suppression. West fails to teach the first passive and first active twin-T filters coupled to the in-phase output of the demodulator, and the second passive and active twin-T filters coupled to the quadrature-phase output of the demodulator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims Objection

7. Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

and any intervening claims. The prior art does not teach the different feed in each one of the first and second signal path having cascaded third, fourth active, passive, twin-T filter pairs having cross coupled feature.

Response to Arguments

8. Applicant's arguments with respect to claims 1-2, 5-7, 11-12 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's amendment for the MPEP 2143.01 for the non-combinable Jayaraman to West due to the combining would change the principle of operation and produce unsatisfactory result, by combining West analog twin-T filters to Jayaraman's digital coefficient filter 240, the ground of rejection has been changed by utilizing Murtojarvi (US 2002/0168,956 A1) and Thomasson (US 2002/0000,874 A1).

Murtojarvi teaches in Fig. 5 the quadrature down conversion with switchable notch filter 10 for I, Q path respectively for two communication standards GSM and EDGE. The notch filter 10 can be any type of notch filter [0073]. Thomasson teaches the cascaded notch filters can be in any order (abstract, Fig. 4-5) with at least on active twin-T filter in the cascaded configuration (Thomasson's claim 2).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (703)-306-5615.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (703)-305-4385.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9306 (for Technology Center 2600 only).

Hand-delivered responses should be brought to 220 South 20th Street, Crystal Plaza Two, Lobby, Room 1B03, Arlington, VA 22202 (Customer Window).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Charles Chow C.C

January 10, 2005.

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600